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COMPILATION OF LEGAL LIMITS FOR HAZARDOUS SUBSTANCES IN FISH AND FISHERY PRODUCTS

prepared by

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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Preparation of this Document

This Fisheries Circular has been prepared in the Inland Water Resources and Aquaculture Service of the Fishery Resources and Environment Division of FAO in response to numerous requests on standards for hazardous substances in seafood. It is a result of work related to risk assessment associated with mercury levels in seafood, combined with an initial compilation of legal limits for mercury in fish. The major body of information was obtained from Government Authorities and Institutions as a result of a worldwide enquiry.

ABSTRACT

A worldwide compilation on legal limits of hazardous substances in fish and fishery products is presented. For each country, it provides the name and address of Government Authorities and Institutions in charge of issuing and/or enforcing standards or legal limits, lists limits for mercury, other trace metals and pesticides and other biocides, and specifies any relevant information on enforcement, imminent changes and other pertinent comments.

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Introduction

The idea of starting an enquiry on standards and legal action levels for various metal and non-metal contaminants in fish and fishery products first evolved during early 1982, after FAO had frequently been approached by institutions and companies active in international commerce, requesting such information which often, however, could not be supplied. Furthermore, it was learnt that some tropical developing countries were suffering multi-million dollar losses every year for not complying with standards set in importing countries and hence saw their products refused entry into the market. Some of these losses were obviously attributable to lack of information on contaminant standards. This, we feel, might be of increasing relevance in view of attempts in several countries, previously not having legal limits, to develop the juridical and enforcement frame for products quality control at various levels.

Therefore, we embarked on the enquiry, sending out a short questionnaire (Appendix 1) to collect pertinent information on legal limits for mercury, other metals, pesticides and other contaminants, on their validity for domestic and imported fishery products, and their enforcement. In the initial phase, we selected the authorities to be approached from the 'Register of Import Regulations for Fish and Fish Products', issued by FAO's Fisheries Industry Division. After the encouraging response, we addressed ourselves, by way of the FAO Representatives or the UNDP Resident Representatives, to all remaining FAO member countries with the dual purpose of identifying the appropriate institutions or authorities and of obtaining notes on any existing standards. For the sake of compiling a comprehensive worldwide overview, countries that are not members of FAO were also approached. On the whole, in only few instances we did not get a response. In such cases, if possible, we drew upon other sources, particularly the 'Report on mercury in fish and fish products', by the Australian Working Group on Mercury in Fish, published by the Australian Government Publishing Service, Canberra, 371 p., 1980. Whenever regulations have been reported to us, they were synthesized in a standard format and returned to the originator for confirmation. Since the terminology used in describing chemical components and substances is similar in many languages, this circular has been prepared in English only.

The following compilation is by country in alphabetical order and lists only the authority (or authorities) in charge of issuing or enforcing standards who will supply further information upon request. In the columns on contaminant standards, mercury has been separated from the other metals because of the outstanding present and historical concern about its levels in foodstuffs in general, and seafood in particular. If not stated otherwise, legal limits for each contaminant are given in ppm (parts per million, equal to $mg \cdot kg^{-1}$) of fresh or live weight followed by a specification of the raw or processed item for which it is applicable. Usually, reference is made to the Government Decree or Regulation and the date of its coming into force. The 'Remarks' column indicates cases in which we obtained information from sources other than the Government authority approached. Furthermore, explanations are given on the enforcement system and related rules where available, alerts on changes anticipated for the near future, and other comments as appropriate.

The present compilation is our first attempt to extend a comprehensive information service on legal limits for contaminants in fish and fishery products. We wish to thank all those who have so far contributed information and hope that it will be a useful reference list. At the same time we invite users to forward their suggestions and comments as well as new information to the Fishery Resources and Environment Division in order to improve any further editions.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of Afghanistan Kabul **Afghanistan**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Office national de commercialisation (ONACO) Algiers **Algeria**				**No reply so far**

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministère de l'agriculture Département de vétérinaire Luanda **Angola**				**No reply so far**

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministerio de Relaciones Exteriores y de Culto Departamento de Promoción Comercial Arenales 761 1061 Buenos Aires **Argentina**				**No reply so far**

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Department of Health P.O. Box 100 Woden, A.C.T. Canberra **Australia**	NH&MRC Model Standard of **0.5° ppm** for fish (including blended fish), crustaceans, molluscs and fish content of canned fish operating in Queensland and Victoria only at present. Other regulations are: **0.5 ppm** for fish, crustaceans, molluscs and fish content of fish products and canned fish in **New South Wales** and **Western Australia** **1.0 ppm** in **South Australia** **1.0 ppm°** in **Tasmania** °mean permitted concentrations	The following are NH&MRC model standards, operating in all States unless otherwise indicated: **1.5 ppm** for **antimony,** maximum permitted concentration in fish and fish products **1.0 ppm** for **inorganic arsenic** in fish, crustacea and molluscs, except in **New South Wales, Victoria** and **South Australia,** where the standard is **1.5 ppm** (arsenic calculated as arsenious oxide) **2.0 ppm** for **cadmium** in molluscs and the mollusc content of mollusc products, except **Tasmania,** where the standard is **2.5 ppm** and **New South Wales,** where the standard is **5.5 ppm** **0.2 ppm** for **cadmium** in fish and fish content of fish products, except **New South Wales** and **South Australia,** where the standard is **5.5 ppm** **70.0 ppm** for **copper** in molluscs and the mollusc content of mollusc products, except **New South Wales, Victoria** and **South Australia,** where the standard is **30 ppm** **10.0 ppm** for **copper** in fish and fish products, except in **New South Wales, Victoria** and **South Australia,** where the standard is **30 ppm** **2.5 ppm** for **lead** in fish in tinplate containers and in molluscs, except **New South Wales, Victoria** and **South Australia,** where the standard is **5.5 ppm** in		Action levels were developed by the National Health and Medical Research Council (NH&MRC); all food, including fish and fish products, is subject to inspection by State health authorities; sampling method is prescribed for mercury in the latest NH&MRC Model Food Standards Regulation A12 Metals and Contaminants in Food, which was adopted at the 93rd Session in June 1982.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
		fish in tin plate containers, and **Tasmania**, with **5.0 ppm** in mussels **1.5 ppm** for **lead** in other fish, except **New South Wales**, **Victoria** and **South Australia**, where the standard is **2.0 ppm** **1.0 ppm** for **selenium** in fish and fish products, except for **New South Wales**, **Victoria** and **South Australia**, where the standard is **2.0 ppm** **150 ppm** for **tin** in fish and fish products packed in tinfoil or tinplate containers, except **New South Wales**, **Victoria** and **South Australia**, where the standard is **250 ppm** **50 ppm** for **tin** in fish and fish products packed in tinfoil or tinplate, except **New South Wales**, **Victoria** and **South Australia**, where the standard is **40 ppm** **1 000 ppm** for **zinc** in oysters, except for **Tasmania**, where the standard is **1 500 ppm**, and **New South Wales** and **South Australia**, with **40.0 ppm** **150 ppm** for **zinc** in all other fish and fish products, except **New South Wales** and **South Australia**, where the standard is **40.0 ppm**, and **Victoria**, with **1 000 ppm** for fish, fish content of fish products and canned fish, crustaceans and molluscs.		

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of **Barbados**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministère de la santé publique et de la famille Cité administrative de l'Etat Quartier Vésale 1010 Bruxelles **Belgium**	None	None	None	The 'Conseil supérieur d'hygiène belge' examines the situation. No action levels set, dietary studies suggest that mercury intake is well below WHO maximum recommended levels for the average population, while cadmium and lead intake is close to the provisional tolerable levels.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Health, Housing and Cooperatives Fisheries Unit Lab. P.O. Box 148 Belize City **Belize**	None	None	None	Spot checks for bacterial counts; rodent and insect control programme in fish processing establishments; hygienic controls; no contaminant standards.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Chief Health Inspector Cabinet Office **Bermuda**	None	None	None	The Public Health (Food) Regulations of 1950 are invoked to control or prohibit imported food items as follows: Regulation 2: No person may sell any food which is unfit for human consumption. Regulation 3(2): No person shall import into these islands any food which has been adulterated, which is not permitted to be sold or whose sale is restricted in the country from which it is exported. 'Unfit for human consumption' means adulterated, unwholesome, injured, tainted or spoiled.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Dirección General Responsable de Normas y Tecnología Ministerio de Industria, Comercio y Turismo La Paz **Bolivia**	None	None	None	Heavy metal analyses on fish from Lake Poopo have recently been carried out, and the preparation of guidelines for storage and quality control of Bolivian fish are foreseen for the near future. Information provided by the Misión Británica, Avenida Arce 2732, Casilla 694, La Paz.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Fish and Fishery Products Inspection Division Ministry of Agriculture Esplanada dos Ministerios 70.000 Brasilia, D.F. **Brazil**	**0.5 ppm** for **total mercury** in fish, crustaceans and molluscs issued in December 1975 as Resolution No. 18/75 by CNNPA (the National Commission for Alimentary Norms and Standards) of the Ministry of Health	None	None	Enforcement of mercury standards by specialized institutions, i.e. CETESB, along with WHO and Codex Alimentarius directives. Analyses of various contaminants are being carried out (nickel, copper and organochlorines) to keep an eye on the situation but no new standards are envisaged for the near future.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Département de vétérinaire Ministère de l'élevage, des pêches et des industries animales Yaoundé **Cameroon**				**No reply so far**

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Inspection and Technology Branch Fisheries and Oceans Canada 240 Sparks Street Ottawa, Ont. K1A OE6 Food Regulatory Affairs Division Food Directorate Health Protection Branch Health and Welfare Canada Tunney's Pasture Ottawa, Ont. K1A OL2 **Canada**	**0.5 ppm** for **total mercury,** edible weight issued 1970. In 1979 swordfish (Xiphias gladius) was excluded from this guideline, but consumers were advised on maximum consumption rates (no more than once a week).	**3.5 ppm** for **arsenic** in fish protein; Regulation in force since March 1979 **150 ppm** for **fluoride** in fish protein; Regulation in force since March 1979 **0.5 ppm** for **lead** in fish protein; Regulation in force since March 1979	**20 ppt** (parts per trillion) for 2,3,7,8-**TCDD** (dioxin) in fish was established in July 1981; in force since January 1982; for all other dioxins total prohibition since June 1980 **5.0 ppm** for **DDT and its metabolites** (DDD,DDE) in all fish products **2.0 ppm** for **PCB** for fish products; issued 1975 **1.0 ppm** for **pyperonylbutoxide** in dried cod **0.1 ppm for any other agricultural chemical or any of its derivates**	Fish Inspection Regulations and Food and Drug Act and Regulations (partly pertaining to fish and fish products, domestic or imported products or fish processed for export). Fish exceeding Canadian standards may be permitted for export if it does not violate regulations of the importing country. Legal action levels issued as Administrative Guidelines but are enforced by Fisheries and Oceans Canada; enforcement includes import controls and surveillance of national waters; action may also involve closing of fishing areas and size control of landings of certain fish species.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Oficina de Planificacion y Presupuesto Ministerio de Salud Santiago **Chile**	None	**0.12 ppm** for **arsenic** in liquid foodstuffs **1.00 ppm** for **arsenic** in other foodstuffs **0.05 ppm** for **cadmium** in all foodstuffs **10.0 ppm** for **copper** in all foodstuffs **2.0 ppm** for **lead** in all foodstuffs **0.05 ppm** for **selenium** in liquid foodstuffs **0.30 ppm** for **selenium** in all other foodstuffs **100 ppm** for **zinc** in all foodstuffs issued as Reglamento Sanitario de los Alimentos and set into force by Supreme Decree of 5 April 1982	None	Legal limits for methylmercury are anticipated in the near future in line with FAO/WHO recommendations. Action levels equally apply to local and imported products.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
INDERENA Calle 34, No. 5-16, piso 3 Bogotá **Colombia**	None	None	None	Quality standards have been defined for marine and fresh waters in draft legislation and decrees (proyecto de decreto reglamentario de la ley 9 de 1979, decreto ley 2811 de 1974 and código de recursos naturales renovables y del ambiente).

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Commission de Communautés Européennes Direction générale de l'agriculture Rue de la Loi 200 1049 Bruxelles Belgium	**0.3 ppm** in a sample of edible part of fish set as a quality aim by the Council of Ministers, based on the Guidelines 464 of 1976.	None	None	No specific action levels are imposed but guideline 79/-923/CEE of 30 October 1979 sets quality criteria for mullusc culture areas, including maximum level for various metals in the water. Product standards are being elaborated.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Le Ministre de la production et des industries agricoles B.P. 41 Moroni **Comoros**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Département de vétérinaire Ministère de la santé Brazzaville **Congo**				**No reply so far**

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministerio de Agricultura y Ganadería Departamento de Prevención de Enfermedades San José **Costa Rica**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Agriculture and Natural Resources Nicosia Cyprus	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
National Food Institute Ministry of the Environment Mørkhøji Bygade 19 DK-2860 Søborg Denmark	**0.5 ppm** in tuna, bonito and products thereof, issued as Order No. 86 of 8 March 1978 by the Ministry of Environment (effective 1 August 1978)	None	**2.0 ppm** for DDT in fish and fish products **5.0 ppm** for DDT in fish liver issued as Order No. 1 of 5 January 1981 by the Ministry of Environment	Enforcement is through the food inspection units of local councils; control also through National Food Institute or by regional labs under the Ministry of Environment; equal application of standards to local production and to imports. Standards for lead, cadmium and tin are in preparation.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of Dominica	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Secretaría de Estado de Agricultura Departamento de Recursos Pesqueros Santo Domingo Dominican Republic	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Instituto Ecuatoriano de Normalización (INEN) Calle Baquerizo Moreno No. 454 Casilla No. 3999 Quito Instituto Nacional de Pesca Letamendi 102 Casilla 5918 Guayaquil **Ecuador**	**1.0 ppm** in canned tuna (INEN 187) issued in April 1975 as mandatory 'Norma Ecuatoriana INEN 184', approved by the Minister of Industry, Commerce and Integration in June 1975 **1.0 ppm** in canned sardines 'Norma Ecuatoriana INEN 185', issued in April 1975 and approved as mandatory by above Minister in June 1975.	**1.0 ppm** for **arsenic** in canned tuna (INEN, 184) **5.0 ppm** for **lead** in canned tuna (INEN, 184) **10.0 ppm** for **copper** in canned tuna (INEN, 184) **100 ppm** for **tin** in canned tuna (INEN, 184) issued together with regulations for mercury in canned tuna, INEN 184. Same regulations applicable for canned sardine, INEN 185.		Inspection system supervised by the National Fisheries Institute. Limits set so far, are currently under review and expected to be changed.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
División de Saneamiento Ambiental Ministerio de Salud Pública y Asistencia Social San Salvador Departamento de Química Agrícola Ministerio de Agricultura y Ganadería Apto. Postal 885 San Salvador **El Salvador**	None	Recommendations by the FAO/WHO Codex Alimentarius Commission are applied; if not available for fish and fishery products, those for meat are used instead.	Recommendations by the FAO/WHO Codex Alimentarius are applied; if not available for fish and fishery products, those for meat are used instead.	Preventive measures include prohibition of utilization of DDT and restrictions in the application of other agricultural chlorinated pesticides and herbicides. General quality control of fish and aquatic invertebrates (fresh, frozen, canned or processed otherwise) includes organoleptic, microscopic and microbiological examination of samples, and, in the case of canned foodstuffs of aquatic origin, analyses of selected heavy metals, or chlor and sodium chloride. Standard methods are prescribed for all aspects of the examinations.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Biological Standards Division Ethiopian Standards Institution P.O. Box 2310 Addis Ababa **Ethiopia**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Food Division National Board of Trade and Consumer Interests P.O. Box 9 Helsinki 53 **Finland**	**1.0 ppm** for **total mercury** in fish issued as Letter No. 6574/563/80 by the National Board of Health on 16 December 1981, substituting the previous ruling of 8 July 1971.	**5.0 ppm** for **arsenic** in fish, crayfish and shellfish **2.0 ppm** for **lead** in mussels, cuttlefish and crayfish both issued as a Decision of the National Board of Trade and Consumer Interests of 17 June 1980 **150 ppm** for **tin** in canned food (including fish and fish products), issued as Decision No. 3050/51/71 of the National Board of Trade and Consumer Interests of 2 May 1979.	None	All maximum levels are equally applicable for domestic and imported foods and are presently under re-evaluation. While the limits for arsenic, lead and tin are unlikely to be changed, an additional maximum level of 0.3 ppm has been proposed for **cadmium.** There is also a recommendation that fish containing 0.5-1.0 ppm **mercury** should not be consumed in quantities exceeding 0.5 kg per week. Examination of imported fish are made by the Customs Laboratory. Domestic fish is controlled by the Municipal Health Authorities and Municipal Laboratories. Analyses of mercury are made by the Public Health Laboratory, the Technical Research Centre of Finland and the National Veterinary Institute.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Direction de la qualité Service vétérinaire d'hygiène alimentaire 44-46 Boulevard de Grenelle 75732 Paris Cedex 15 **France**	**0.5 ppm** in fish, crustacea and molluscs issued by the Ministry of Agriculture, 21 December 1976 **0.7 ppm** in tuna and swordfish equally valid for domestic production and imports.	None	None	Non-metal standards are planned but not yet issued.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry for Agriculture, Forestry and Foodstuffs Koepenicker Allee 39-97 1156 Berlin **German Democratic Republic**				**No reply so far**

Government agency / approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Bundesgesundheitsamt Zentrale Erfassungs- und Bewertungsstelle für Umweltchemikalien (ZEBS) Postfach 1000 Berlin 33 **Germany, Federal Republic of**	**1.0 ppm** in edible part of freshwater and marine fish and fish products, as published in 'Bundesgesundheitsblatt' (Federal Health Newsletter) No. 15, 1979.	**0.5 ppm** for **lead** in edible part of freshwater fish; recommended maximum level, 1979 **0.5 ppm** for **cadmium** in edible part of freshwater fish; recommended maximum level, 1979.	NOTE: FS = fresh substance **5.5 ppm** for DDT, DDD and DDE and isomers calculated as DDT in eels, salmon, sturgeon and their products, except roe products; pertaining to fat content **2.0 ppm** for DDT, DDD, DDE and isomers, calculated as DDT in other fish and shellfish and their products, except those of their liver and roe; pertaining to fat content **5.0 ppm** for DDT, DDD, DDE and isomers, calculated as DDT in fish liver and roe and products thereof; pertaining to fat content **1.0 ppm** for **aldrin and dieldrin,** expressed as dieldrin, in eel, salmon, sturgeon and their products, as well as in fish liver and in roe products; pertaining to fat content **0.5 ppm** for **aldrin and dieldrin,** expressed as dieldrin in other fish, shellfish and products thereof (except products from fish liver and roe); pertaining to fat content **0,01 ppm** for **2-Aminobutan** in fish and fishery products (see Butylamin) **(FS)** **0.01 ppm** for **Carbophenothion** in fish and fishery products **(FS)** **0.01 ppm** for Ethyl 2 hydroxy-2,2 bis(4 chlorophenyl) acetate **(Chlorbenzilat)** in fish and fishery products **(FS)**	Enforcement is through the Food Control System of the federal states. All federal regulations equally apply for domestic and imported fish and fish products; prohibitions on particular fishing areas lie within the responsibility of the federal states.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
			0.01 ppm for 3-(4-bromo-3-chlorophenyl)-1-methoxy-1-methyl-carbamide (**Chlorbromuron**) in fish and fishery products **(FS)** **0.01 ppm** for **oxychlordane** expressed as chlordane in fish and fishery products **(FS)** **0.01 ppm** for 1,4 Dichloro-2,5-dimethoxy-benzol (**Chloroneb**) in fish and fishery products **(FS)** **0.01 ppm** for **Coumaphos** in fish and fishery products **(FS)** **0.01 ppm** for Dimethyl-cis-1-methyl-2-(1-phenyl-ethoxy-carbonyl)-vinylphosphate (**Crotoxyphos**) in fish and fishery products **(FS)** **0.01 ppm** for O-(2-chloro-4-tert-butyl-phenyl)-O-methyl-N-methyl-amidophosphate (**Crufomat**) in fish and fishery products **(FS)** **5.0 ppm** for 2,6-dichloro-benzonitrile (**Dichlobenil**) in fish, shellfish and and their products **(FS)** **0.5 ppm** for **2,6-dichloro-benzamide** in fish, shellfish and their products **(FS)** **0.1 ppm** for N,N-dimethyl-2,2-diphenyl-acetamide (**Diphenamid**) in fish and fishery products **(FS)** **0.01 ppm** for **Dipropylisoancho-meronat** (Dipropylpyridin-2,5-dicarboxylat) in fish and fishery products **(FS)** **0.01 ppm** for **endrin** and **γ-ketoendrin** expressed as endrin in fish and fishery products **(FS)**	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
			0.01 ppm for **ethion** in fish and fishery products **(FS)** **0.01 ppm** for O,O-dimethyl-O-4-(N,N-dimethyl-sulfamyl)-phenyl-thiophosphate and O,O-dimethyl-O-4-(N,N-dimethyl-sulfamyl)-phenylphosphate (**Famaphos,** including the P-O-compound) in fish and fishery products **(FS)** **0.01 ppm** for O,O-dimethyl-O-(2,4,5-trichlorophenyl)-monothio-phosphate (**Fenchlorphos**) in fish and fishery products **(FS)** **0.01 ppm** for 2-(2,4,5-trichloro-phenoxy)-propionic acid (**Fenoprop**) in fish and fishery products **(FS)** **0.01 ppm** for **Heptachlor** and **Heptachlorepoxid** expressed as Heptachlor in fish and fishery products **(FS)** **0.5 ppm** for **hexachlorobenzene** (HCB) in fish, crustaceans, molluscs and products thereof; pertaining to fat content **0.5 ppm** for **HCH-isomers except lindane** in fish, crustaceans, molluscs and products thereof; pertaining to fat content **0.01 ppm** for O,O-dimethyl-O-(2,5-dichloro-4-iodophenyl)-thio-phosphate (**Jodfenphos**) in fish and fishery products **(FS)** **2.0 ppm** for **lindane** in fish, crustaceans, molluscs and products thereof; pertaining to fat content **0.01 ppm** for **mirex** in fish and fishery products **(FS)**	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
			0.01 ppm for O-(1,2-dibromo-2,2-dichlorethyl)-O,O-dimethyl phosphate (**Naled, Dibrom**) in fish and fishery products (FS) **0.01 ppm** for 2-chloro-6-trichloromethyl-pyridine (**Nitrapyrine**, incl. 6-chloro-picolinic acid, expressed as Nitrapyrine) in fish and fishery products (FS) **0.01 ppm** for 4,trifluoromethyl-2,6-dinitro-N-propyl-N-cyclo propyl-methyl-aniline (**Profluralin**) in fish and fish products (FS) **0.01 ppm** for N-(3,4-dichlorophenyl)-2-propionic acid (**Propanil**) in fish and fishery products (FS) **0.01 ppm** for 1-(p-tert-butyl-phenoxy)-cyclohexyl-2-propinyl-sulfite (**Propargit**) in fish and fishery products (FS) **0.01 ppm** for 2,4-bis(ethyl-amino)-6-chloro-1,3,5-triazine (**Simazin**) in fish, crustaceans, molluscs and products thereof (FS) **0.3 ppm** for 2-methylthio-4-ethyl-amino-6-tert-butyl- amina -1,3,5-triazine (**Terbutryn**) in fish, crustaceans, molluscs and products thereof (FS) **0.01 ppm** for N-(Triphenyl-methyl)-morpholine (**Trifonmorph**) in fish and fishery products (FS)	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ghana Standards Board Accra Ghana	None	None	None	In general, fish and fishery products are expected to comply with the requirements set by the Codex Alimentarius Commission. For export purposes, however, the methylmercury level should comply with the limits set by the importing countries.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Service vétérinaire Ministère de l'agriculture 2, Rue Acharnon Athens 102 **Greece**	**0.7 ppm** for methyl mercury in all fish and fish products of domestic or foreign origin issued by the 'Conseil Supérieur de Chimie' as decision No. 3280/A/17 October 1974.	None	None	Enforcement is through veterinary inspection.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of **Grenada**	None	None	None	The creation of a Standards Bureau is anticipated in the near future.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of Grenadines, The	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Agriculture Fisheries Division 39, Brickdam Stabroek Georgetown Guyana	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Service des ressources halieutiques et côtières Port-au-Prince Haiti	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Dirección General de Salud Control de Alimentos Edificio Paredes Tegucigalpa Honduras	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Urban Services Department Headquarters 12th Floor, West Wing Central Government Offices 11, Ice House Street Hong Kong	**0.5 ppm** in all foodstuffs, issued as part of the Food Adulteration (Metallic Contamination) Regulations, 1983, in force since 24 May 1983	**1 ppm** for **antimony** in fish, crab meat, oysters, prawns and shrimps **1.4 ppm** for **arsenic** in shellfish and shellfish products **6 ppm** for **arsenic** in solids being fish and fish products **10 ppm** for **arsenic** in solids being shellfish and shellfish products **2 ppm** for **cadmium** in fish, crab meat, oysters, prawns and shrimps **1 ppm** for **chromium** in fish, crab meat, oysters, prawns and shrimps **6 ppm** for **lead** in all solid foodstuffs **230 ppm** for **tin** in all solid foodstuffs issued as part of the Food Adulteration (Metallic Contamination) Regulations 1983, in force since 24 May 1983		The Regulations are enforced under the food safety surveillance programme of the Urban Services Department, and apply equally to domestic and imported fish and fishery products.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Marine Research Institute Skülagata 4 Reykjavik **Iceland**	None	None	**0.5 ppm** for α, β, γ-**hexachloro-cyclohexane** in margarine measured on fat basis	Hydrogenated fish oils may be a major constituent of margarine.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
The Marine Products Export Development Authority Ministry of commerce P.O. Box 1708 Collis Estate, MG. Road Cochin-682 016 **India**	**0.5 ppm** for **total mercury** in fish and fish products expressed in mg/kg **dry weight.**	**1.0 ppm** for **arsenic** in fish and fish products **5.0 ppm** for **lead** in fish and fish products **10.0 ppm** for **copper** in fish and fish products **50.0 ppm** for **zinc** in fish and fish products **250 ppm** for **tin** in fish and fish products all on **dry weight** basis		Indian Standards Institution (ISI) has laid down ISI (Certification Marks) Act and associated Rules and Regulations; ISI Mark for products under inspection, testing and quality control supervised by ISI; any fish import is prohibited; ISI is contemplating maximum admissible limits for DDT and PCB, but they will come into force at the earliest in 1983 or 1984.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Fisheries Directorate Ministry of Human Environment Baghdad **Iraq**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Agriculture Fisheries Technology Unit Golani Road 20 Haifa **Israel**	**0.5 ppm** for all fish; domestic or imported tuna receive particular attention.			**No reply so far** Surveillance for mercury exists: even though a single sample may be up to 1 ppm, the average for the lot may not be more than 0.5 ppm, otherwise it will be rejected. New legislation is under preparation.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Istituto Superiore di Sanità 299 Viale Regina Elena 00100 Rome **Italy**	**0.7 ppm** for **total mercury** related to fresh weight in force for fish and fishery products imported from outside the EEC through Ministerial Decree of 14 December 1971 in force for frozen tuna (Thunnus thynnus and other tunas and bonitos) of domestic and EEC origin through Ministerial Decree of 13 May 1976 in force for bivalve molluscs of domestic production through Ministerial Decree of 27 April 1978 extended to fresh sharks and dogfish through Ministerial Decree of 28 January.	**2.0 ppm** for **lead** in domestic molluscs in force since 27 April 1978 through ministerial decree.	None	Surveillance is through local health units (USL = Unità Sanitarie Locali) following prescribed methodology.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Health and Welfare 2 Kasumigaseki 1-Chome, Chiyoda-ku Tokyo **Japan**	**0.4 ppm** for **total mercury**, issued as a provisional guideline. **0.3 ppm** for **methyl mercury**; weekly intake is supposed not to be above 170 microgram methyl mercury for an average adult weighing 50 kg. Diets of pregnant women and children should be more strictly controlled.			With respect to potential mercury poisoning, fishing is prohibited in the following areas: Tokuyama Bay, Yamaguichi Prefecture; Minamata Bay, Kumamato Prefecture; Kinko Bay, Kagoshima Prefecture. Some fish species with naturally high mercury levels are exempted. **No reply so far;** known from other sources

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Health and Social Affairs 77, Sejong-Ro Chongro-ku Seoul **Korea, Republic of**	**0.5 ppm** as decided in the National Assembly session late 1978.			**No reply so far;** known from other sources.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Kuwait Environmental Protection Council **Kuwait**	None	None	None	Standards for hazardous chemicals are under discussion in the Kuwait Environmental Protection Council.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of Liberia Monrovia **Liberia**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministère de la santé publique 57, Boulevard de la Petrusse **Luxembourg**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Justice Private Bag 333 Lilongwe **Malawi**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Director of Health Food Quality Control Unit Ministry of Health Jalan Cenderasari Kuala Lumpur **Malaysia**	None	None	None	Updating of the Food and Drugs Ordinance and Regulation of 1952 is presently under way to include maximum allowable levels for mercury and mercuric oxide in fish and fish products.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Fisheries Male **Maldives**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministère chargé du Développement Rural Bamako **Mali**	None	None	None	Organoleptic characteristics of dried and smoked fish are examined, particularly colour, odour and texture.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Attorney General Republic of the Marshall Islands Majuro **Marshall Islands** 96970	None	None	None	Legislation pertains to general fisheries activities prohibiting use of explosives, poisons, chemicals, etc., and to air, land and water pollution.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Dirección General de Asuntos Jurídicos Departamento de Compilación de Leyes y Registro de Funcionarios Secretaría de Salubridad y Asistencia Lieja No. 7 Col. Juarez Mexico 6, D.F. Mexico	No action levels for any contaminants, but checks to comply with U.S. for export to the U.S.A.		regulations for those fish, crustaceans or fish products intended	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministerie van Welzijn, Volksgezondheid en Cultuur Dokter Reijersstraat 12 Leidschendam **Netherlands**	**1.0 ppm** for **total mercury** in all fish, crustacea and molluscs	**0.05 ppm** for **cadmium** in fish **0.3 ppm** for **cadmium** in crustacea **1.0 ppm** for **cadmium** in molluscan shellfish **0.5 ppm** for **lead** in fish and crustacea **2.0 ppm** for **lead** in molluscan shellfish	**5.0 ppm** for PCB in eel on product weight (FW) basis, issued in July 1981	Enforcement is through 16 general food inspection service stations; standards and recommendations apply equally to domestic and imported fish. Planned new regulations: **3.0 ppm** for **PCB** in mackerel-type fish **1.0 ppm** for **PCB** in other marine fish **25.0 ppm** for **PCB** in fish liver **0.1 ppm** for **lead** in canned fishery products.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Division of Public Health Department of Health Macarthy Trust Building Lambton Quay Wellington **New Zealand**	**0.5 ppm** for **total mercury** in fish and fish products on a fresh weight basis in force since 1971.	**1.0 ppm** for **arsenic** **2.0 ppm** for **lead** 10.0 **ppm** for **fluorine** **40.0 ppm** for **zinc** **2.0 ppm** for **selenium** **1.0 ppm** for **cadmium** **150 ppm** for **tin** **1.0 ppm** for **antimony** **30.0 ppm** for **copper** in fish and fish products on a fresh weight basis, in force since 1971	None	New food regulations are under preparation, but little change is anticipated for the maximum levels of contaminants; food inspection does exist, but successful prosecutions for excess mercury in fish have been held in court.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Instituto Nicaraguense de la Pesca (INPESCA) Managua **Nicaragua**	None	None	None	The special law on the exploitation of the fishery resources prohibits the use of dynamite and any toxic substances for fishing. A general surveillance system is in force for quality control of the landings.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Conseiller Technique Principal du Project Développement des Pêches NER/79/018 Niamey **Niger**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Nigerian Institute for Oceanography and Marine Research Federal Ministry of Science and Technology P.M.B. 12729 Victoria Island Lagos **Nigeria**	None	None	None	No issuing of standards is anticipated for the near future.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
The Health Services of Norway The Royal Norwegian Ministry of Social Affairs Akersgt. 42 Oslo **Norway**	None	None	None	No action level for Hg, but adhering to FAO/WHO standards '...a provisional tolerable weekly intake of 0.3 mg of total mercury per person of which no more than 0.2 mg should be present as methyl mercury (expressed as mercury)...' was established. People are warned against fish from Sorfjorden, but no lakes are blacklisted.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of the Sultanate of Oman Muscat Oman	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Office of the High Commissioner Office of Health Services Division of Environmental Health Saipan Mariana Islands 96950 **Pacific Islands Trust Territories**	The U.S. Food and Drug Administration standards on levels of hazardous substances in fish and seafood are used.			The local government Divisions of Environmental Health are responsible for investigating such imported foods suspected of being contaminated.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Livestock Division Ministry of Agriculture Islamabad **Pakistan**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Department of Law Ministry of Health P.O. Box 22114 Konedobu Port Moresby **Papua New Guinea**				Preliminary reply only

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
División Caza, Pesca y Piscicultura Ministerio de Agricultura y Ganadería Asunción **Paraguay**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Oficina Sectorial de Planificación Ministerio de Pesquería Avenida Javier Prado Este 2485, 5° piso Lima **Peru**	None	None	None	There is a product surveillance for export according to the action levels in the country of destination. No limits for mercury, but the Dirección General de Transformacion belonging to the ministry is undertaking studies that might lead to action levels. The same applies for nitrosamines, 'antioxidantes', organic and mineral colours, emulsifiers, etc.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Bureau of Fisheries and Aquatic Resources Arcadia Building 860 Quezon Avenue Quezon City Metro Manila 3008 Food and Drug Administration Rizal Avenue Manila **Philippines**	**0.5 ppm** for **methyl mercury** in fish, shellfish and fishery products on fresh weight basis, in force since 1970	**200 ppm** for **tin** **0.5 ppm** for **lead** **3 ppm** for **arsenic** in all food, including processed fish	International standards are applied	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Polski Komitet Normalizacji, Miar i Jakosci ul. Elektoralna 2 00-139 Warszawa 1 **Poland**	None	**4.0 ppm** for **arsenic** in fish preserves issued in 1976 (PN-76/A-86763) and in pickled fish issued in 1980 (PN-80/A-86780) on fresh weight basis **30 ppm** for **copper** in fish preserves (same as above) **10 ppm** for **copper** in pickled fish (same as above) **2.0 ppm** for **lead** in fish preserves (same as above) **1.0 ppm** for **lead** in pickled fish (same as above) **100 ppm** for **tin** in fish preserves (same as above) **50 ppm** for **tin** in pickled fish in metal containers (same as above) **20 ppm** for **tin** in pickled fish in glass containers (same as above) **50 ppm** for **zinc** in fish preserves (same as above) **30 ppm** for **zinc** in pickled fish (same as above)	None	**0.5 ppm** for **total mercury** are regarded acceptable by the Ministry of Health, but there is no specific legislation; the problem is handled on a case-to-case basis. Maximum levels equally apply to domestic and imported fish and fishery products. Reduction of maximum permissible content of lead, copper, zinc and tin in canned fish is anticipated in the near future. Enforcement is through Sanitary Epidemiological Stations. In certain cases, the Chief Sanitary Inspector enacts special limitations on metal contents of products or batches of products.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Direcção Geral dos Serviços Veterinarios Rua Victor Cordon 4 1200 Lisboa **Portugal**	No specific prohibitions for domestic use	None	None	Legislation is contemplated and the EEC standards will presumably apply when the country becomes a full member.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Secrétariat d'Etat à la pêche maritime Direction de l'océanographie et de la pêche maritime Dakar **Senegal**	None	None	None	Analyses demonstrated that **mercury** levels in all species investigated, except billfish and sharks, were mostly below 0.5 ppm. Decrees are in force pertaining to hygiene and food quality standards for fresh and processed fish and seafood, including cans destined to the local market and for export, latest version February 1969. All regulations are presently under review and a National Committee of Standards is being founded redistributing the respective responsibilities.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Lands Energy and Natural Resources P.O. Box G24 Honiara **Solomon Islands**	None	None	None	Legislation does not exist, but a laboratory will be set up to initiate contaminant analyses. Regulations will be issued if needed at a later stage.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of Somalia Mogadishu **Somalia**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Servicio Oficial de Inspección Vigilancia y Regulaciones Ministerio de Agricultura Madrid **Spain**	**0.5 ppm** in fresh, chilled and frozen fish and seafood of at least 5 kg weight, and in any canned or processed fish and fishery products; issued 30 March 1973 as Resolution of the General Health Division.	None	None	Enforcement is through provincial sanitary structures (veterinary services and national health laboratories) with prescribed sampling and analytical techniques. If mercury levels in fish products exceed the established tolerances they will be destroyed in the presence of the competent sanitary authorities.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of **St. Lucia**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of St. Vincent	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Chemical Laboratories Ministry of Health P.O. Box 287 Khartoum **Sudan**	None	None	None	In the absence of legal limits Codex Alimentarius recommendations serve as reference.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Fisheries Division Ministerie van Landbouw, Neeteelt, & Visserij Paramaribo **Suriname**	None	None	None	Introduction of fish quality control is presently ventilated between the Fisheries Division and the Food Inspection Service of the Ministry of Public Health.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Swedish Codex Contact Point National Food Administration P.O. Box 622 S-751 26 Uppsala **Sweden**	**1.0 ppm** for **total mercury** in fishery products in force since March 1983	**250 ppm** for **tin** for most foods including fishery products, in force as from March 1979 as maximum permitted level **1.0 ppm** for **lead** in the edible part of the food in force since March 1979 **2.0 ppm** for **lead** in liver, including fish liver and in preserved products in tinplate cans in force since March 1979	**0.005 ppm** for **aflatoxin** (sum of B_1, B_2, G_1, G_2) in force since November 1974 for all foods **0.1 ppm** for **aldrin** and **dieldrin** for unprocessed fish, crustaceans, molluscs and parts thereof in force since July 1980 **5.0 ppm** for **DDT, DDD** and **DDE** (as above) **0.2 ppm** for **hexachlorobenzene** (as above) **0.2 ppm** for **hexachlorocyclohexane**, α, β and γ (lindane) (BHC, HCH) (as above) **200 ppm** for **histamin** for fishery products in force as from July 1980 **2.0 ppm** for **PCB** in unprocessed fish, crustaceans, molluscs and parts thereof in force since July 1980 **5.0 ppm** for **PCB** in fish liver and in salmon **0.1 ppm** for **trichlorfon** (metrifonate) in unprocessed fish, crustaceans, molluscs and parts thereof in force since July 1980 **0.01 ppm** for **vinyl chloride** for all foods in force since July 1978. The previous level, in force between 1974 and 1978, was 0.05 ppm.	Since 1967 a level of 1 mg/kg, calculated as mercury per fresh weight, has been used as a guideline for blacklisting of certain Swedish waters. Sale or serving of fish from these waters is not permitted. Too frequent consumption, e.g. more than one meal a week of certain fish from other lakes and coastal waters should be avoided.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Federal Veterinary Office Schwarzenburgstrasse 161 3097 Liebefeld **Switzerland**	**0.5 ppm** in fish and fishery products; limit set in the Circulaire de l'Office vétérinaire fédéral of 20 May 1972, in force since 1 September 1972 **0.5 ppm** in imported crustaceans and molluscs; provisional limit in force as of 1 January 1982	**0.1 ppm** for **cadmium** in imported canned fish, crustaceans and molluscs **1.0 ppm** for **lead** in imported canned fish, crustaceans and molluscs provisional limits in force as of 1 January 1982	**1.0 ppm** for **PCB** in fish and fishery products (edible part). Provisional limit in force as of 1 January 1981.	The previous limit for lead was 2.0 ppm, in force since 26 February 1981. If mercury levels in individual samples approach or exceed the limit, a homogenized sample of a lot of 10 units is analysed. Should the limit be exceeded, the whole lot is removed from the market or refused entrance into the country. Analytical procedures are prescribed by the Federal Veterinary Office. Standard for cadmium under examination.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Fishery Technological Development Division Department of Fisheries Bangkok **Thailand**	0.5 ppm	2 ppm for **arsenic** 20 ppm for **copper** 1 ppm for **lead** 250 ppm for **tin** 100 ppm for **tin** in foodstuff in metal containers, issued as Notification No. 69 (1982) of the Ministry of Public Health	0.1 ppm for **aldrin** 0.5 ppm for BHC 5.0 ppm for DDT 0.3 ppm for **dieldrin** 0.3 ppm for **endrin** 0.3 ppm for **heptachlor** and **heptachlor epoxide** 0.5 ppm for **Lindane** 0.6 ppm for **Malathion** 0.2 ppm for **Parathion** in fish and fish products on a fresh weight basis. Tolerances set for toxic residues through Notification No. 71 (1982) of the Ministry of Public Health.	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Service des Productions Animales Ministère du Développement Rural Lomé **Togo**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Foreign Affairs Naku'alofa Tongatapu Island **Tonga**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Quality Control Superintendent National Fisheries Company Ltd. P.O. Box 896 Port-of-Spain **Trinidad and Tobago**	None	None	None	With the implementation of the Pesticide and Toxi-chemical Act of 1981 and the imminent establishment of a Food Advisory Committee, legal limits for chemicals to be specified will be imposed for both national production and imports under the control of the Food and Drug Inspectorate. The Inspectorate is already now authorized to examine any custom entries of food, drugs or cosmetic products imported into Trinidad and Tobago, and take samples for hygienic examination.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Fisheries Department Ministry of Agriculture and Forestry Ankara **Turkey**	None	None	None	There are regulations for contaminant levels in water, but no such standards have been set for contaminants in fish or fishery products, since analyses, i.e. of mercury in canned sardines, anchovies and tuna, generated levels below action levels in most countries. Average percentage of methylmercury was 61% of the total.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of the **Turks and Caicos Islands**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Agriculture, Fisheries and Food Food Science Division Great Westminster House Horseferry Road London SW1 **United Kingdom**		**3.0 ppm** for **lead** in canned fish; **5.0 ppm** for **lead** in dried fish; **10.0 ppm** for **lead** in shellfish; **2.0 ppm** for **lead** in fish not otherwise specified, issued as Food Regulations on 12 April 1980. **1.0 ppm** for **arsenic** in foods, except 'in the case of fish (including crustaceans and molluscs), edible seaweed or any product containing fish or edible seaweed where arsenic in proportions exceeding 1 ppm is naturally present', in which case the Arsenic-in-Food Regulations, 1959, do not apply. Currently under review. No legal limits for **copper,** but **20 ppm** was recommended as a general limit in food by the Food Standards Committee in 1956. However, the sale of articles such as shellfish 'containing copper in excess of 20 mg/kg should be permitted if it can be shown that the copper is of natural occurrence'. No legal limits are in force for **zinc,** but **50 ppm** were recommended by the Food Standards Committee in 1953. However, foods which 'naturally contain more than 50 mg/kg such as herrings, shellfish, crustacea, should not be objected to'. **250 ppm** for **tin** have been recommended for canned food by the Food Standards Committee.	None	In all cases the statutory or recommended limits apply to a metal concentration in mg/kg fresh weight. The Statutory Regulations are made under the provisions of the Food and Drugs Act, 1955; enforcement is by examination of foods by local authorities in the U.K. regardless of food origin. The Food Additives and Contaminants Committee is currently reviewing the presence of lead, tin and iron in canned foods, including fish products. No legal limits are in force for mercury in domestic fish or other foods; however, the Food Additives and Contaminants Committee recommended in 1973 that fish containing levels of mercury unacceptable in the country of origin should not be imported into the U.K.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
International Affairs Staff Office of Health Affairs Food and Drug Administration Rockville, MD 20852 **United States of America**	**1.0 ppm** for **total mercury** in fish, shellfish, crustaceans, other aquatic animals, edible portion only; fresh, frozen or processed; issued June 1978 (previously 0.5 ppm). Ref.: CPG 7108.07		**0.3 ppm** for **aldrin and dieldrin** in fish and shellfish (fresh weight) (or residues of the two pesticides, individually or in combination. However, in adding amounts of aldrin and dieldrin do not count aldrin or dieldrin found at a level below 0.3 ppm for fish); issued in the sixties: CPG 7120.23-A **0.3 ppm** for **chlordane** (residues of chlordane include cis and trans chlordane, cis and trans nonachlor, oxychlordane (octachlor epoxide), α, β and γ chlordene, and chlordene. However, levels of individual components must be quantified at 0.02 ppm or above and confirmed prior to be added into the 'chlordane' total value) in fish; issued by FDA in June 1979; CPG 7120.23-C **5.0 ppm** for **DDT**, DDE and **TDE** alone or in combination in fish and shellfish (minimum level of individual component prior to adding is 0.2 ppm); CPG 7120.23-D **0.3 ppm** for **endrin** in fish and shellfish; CPG 7120.23-F **0.3 ppm** for **heptachlor** and **heptachlor epoxide** in fish and shellfish for residues of the pesticide individually or in combination (but do not count any found at a level below 0.3 ppm); CPG 7120.23-H **0.3 ppm** for **kepone** in fish and shellfish issued March 1977 (changed from previous level of 0.1 ppm); CPG 7120.23-I	The Food and Drug Administration issues action levels in its Compliance Policy Guides. In situations where a particular contaminant is not covered, its regulatory significance is assessed on a case-to-case basis. Enforcement for imports or interstate shipments are by a compliance programme of selective inspection based on such criteria as history of the products, the importers, the country or source of origin and other surveillance needs. Other examinations involve checks for filth, decomposition, histamines in tuna and Mahi Mahi and microbial contamination in some cases. Fish and shellfish must be free from contamination with pathogenic organisms such as salmonella. **2.0 ppm** for **PCB** as tolerance in fish and shellfish was issued on 29 June 1979, superseding the previous 5.0 ppm tolerance. However, the 2 ppm PCB tolerance was held in abeyance as a result of objections received by FDA; therefore, until resolution of the issue, the 5.0 ppm tolerance will be enforced.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
			0.4 ppm for **kepone** in crab-meat; CPG 7120.23-I **0.1 ppm** for **mirex** in fish, issued in May 1976; CPG 7120.23-K **5.0 ppm** for **toxaphene** in fish; CPG 7120.23-L **5 ppm** for **PCB** in fish and shellfish; tolerance established in 1973 80 µg/100 g meat for **paralytic shellfish toxin** in clams, mussels and oysters (fresh, frozen, canned); CPG 7108.20	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministère du Tourisme et de l'Environnement Direction de la Pêche et de la Pisciculture B.P. 7044 Ouagadougou Ministère du Développement Rural Service Nutrition Ouagadougou **Upper Volta**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Dirección General Instituto Nacional de Pesca (INAPE) Ministerio de Agricultura y Pesca Montevideo **Uruguay**	None	None	None	The Fish Inspection Service of INAPE applies international standards in relation to fish products, i.e. U.S. Food and Drug Administration standards, in respect of both national and imported products (Decree No. 15/983).

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Sanitary Inspection Ministry of Health Moscow **U.S.S.R.**	**0.2 ppm** for river fish **0.3 ppm** for tinned fish and fish products from river fish **0.5 ppm** for fresh fish, tinned fish and products from marine fish **0.7 ppm** for fresh tuna **1.0 ppm** for tinned tuna			**No reply so far** Information obtained from other sources

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
COVENIN Edf. Fundación La Salle, 5º piso Av. Boyacá Caracas **Venezuela**	**0.1 ppm** in sardines and shellfish, fresh and canned, and **0.5 ppm** in tuna, fresh and canned	**0.1 ppm** for **arsenic** in sardines, tuna, and shellfish, fresh and canned below detection limits for **cadmium** in sardines and tuna, fresh and canned, and **0.1 ppm** in shellfish, fresh and canned **10 ppm** for **copper** in sardines, tuna and shellfish, fresh and canned **2 ppm** for **lead** in sardines, tuna and shellfish, fresh and canned **100 ppm** for **tin** in sardines, tuna and shellfish, fresh and canned		Regulations for sardines and tuna, fresh and canned, are currently under revision and will probably be modified with a limit of 0.1 ppm for cadmium.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Chief Minister's Office Plymouth Montserrat **West Indies**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Government of **Western Samoa**	None	None	None	

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Projet ZAI/80/003 - Pêches artisanales B.P. 7248 Kinshasa **Zaire**	None	None	None	In accordance with Belgian colonial laws, quality standards are applied with reference to food additives, etc. Quality control is through food inspection services.

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Ministry of Health Office of Permanent Secretary P.O. Box 30205 Lusaka **Zambia**	**0.3 ppm** for **methylmercury** in tuna **0.2 ppm** for **methylmercury** in other fish	**3.5 ppm** for **arsenic** in fish protein **5.0 ppm** for **arsenic** in marine and freshwater fishery products **100 ppm** for **copper** in all fishery products **0.5 ppm** for **lead** in fish protein **10 ppm** for **lead** in marine and freshwater fishery products **150 ppm** for **fluorine** in fish protein **25 ppm** for **fluorine** in all other marine and freshwater fishery products **100 ppm** for **zinc** in all fishery products		Under the authority of the Food and Drug Act, the Zambian Food and Drugs Regulations in force since September 1976 also have provision for maximum levels of food additives, such as **300 ppm sodium sulphite** on canned flaked tuna **sodium tripolyphosphate** on frozen fish fillets, lobsters, crabs, clams and shrimps (0.5% of total added phosphate) **sodium carbonate** on frozen fillets, lobsters, crabs, clams and shrimps (15% of the combination of sodium hexametaphosphate) **1000 ppm propyl-P-hydroxy benzoate** and **methyl-P-hydroxy benzoate** used as preservatives

Government agency approached	Mercury standards	Other trace elements standards	Pesticide and organochlorine standards	Remarks
Department of National Parks and Wildlife Management P.O. Box 8365 Causeway **Zimbabwe**	None	None	None	Revision of the entire food legislation is planned.

APPENDIX I

The following questions were forwarded to Government Authorities and Institutions in order to compile pertinent information on legal limits for hazardous substances in fish and fishery products:

- Are there legal limits in force for methylmercury or any other toxic substances (please specify) in fish, shellfish and fishery products? (Do they refer to fresh weight or dry weight?)
- If so, since when are they in force?
- Were there any recent changes?
- Are changes anticipated for the near future?
- Is a control system in operation for enforcement of legal limits?
- Are legal limits equally applied on national production and imports?
- Have recommendations of a non-legally-binding character been issued on contaminants?
- Should you not be aware of the relevant standards or quality criteria, we would be grateful if you would advise us which other agencies of your government we should approach.